AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 3, 4, 8, 10, 12, 14, 15, 26, 28, 31-17, 35, 45, 51, and 52, as follows, and cancel Claim 2, without prejudice or disclaimer to continued examination on the merits:

1. (Currently Amended) A network device comprising:

a physical layer subsystem for transferring network data in accordance with a physical layer protocol ~~and including~~, said physical layer subsystem comprising a physical layer working port ~~capable of being~~ connected to a first physical network attachment and a cross-connection subsystem;

an upper layer subsystem for transferring the network data in accordance with an upper layer protocol and coupled with the physical layer subsystem; and

wherein the physical layer subsystem further includes a physical layer test port coupled to the physical layer subsystem and the upper layer subsystem and ~~capable of being~~ connected to a second physical network attachment,

wherein said cross-connection subsystem transfers network data between the physical layer working port and the upper layer subsystem and multicasts a portion of the network data to the physical layer test wherein said network data remains unprocessed and untranslated by said upper layer subsystem; and

wherein said test port is ~~capable of being~~ programmed while the network device is operating to function as a working port for normal data transfer while maintaining uninterrupted service provided by said network device.

2. (Cancelled)

3. (Currently Amended) The network device of ~~claim 2~~ claim 1, wherein the cross-connection subsystem comprises a cross-connection card, the physical layer subsystem a port card including the working port and the test port and connected to the cross-connection card, and the upper layer subsystem includes a forwarding card connected to the cross-connection card.

4. (Currently Amended) The network device of ~~claim 2~~ claim 1, wherein the cross-connection subsystem comprises a cross-connection card, wherein the physical layer subsystem comprises a first port card including the working port and a second port card including the test port, wherein the first and second port cards are connected to the cross-connection card, and the upper layer subsystem includes a forwarding card connected to the cross-connection card.

5. (Original) The network device of claim 4, wherein the first port card further includes a second test port.

6. (Original) The network device of claim 4, wherein the second port card further includes a second test port.

7. (Original) The network device of claim 4, wherein the physical layer subsystem further includes a third port card including a second test port and wherein the third port card is connected to the cross-connection card.

8. (Currently Amended) The network device of ~~claim 2~~ claim 1, wherein the cross-connection subsystem comprises a first cross-connection card and a second cross-connection card, wherein the physical layer subsystem comprises a first port card connected to the first cross-connection card and a second port card connected to the second cross-connection card, and wherein the upper layer subsystem comprises a first forwarding card connected to the first cross-connection card and a second forwarding card connected to the second cross-connection card.

9. (Original) The network device of claim 8, wherein the first and second cross-connection cards are connected and the first port card includes the working port and the second port card includes the test port.

10. (Currently Amended) The network device of ~~claim 2~~ claim 1, wherein a portion of the network data comprises a received portion of the network data.

11. (Original) The network device of claim 10, wherein the received portion of the network data comprises at least one path.

12. (Currently Amended) The network device of ~~claim 2~~ claim 1, wherein the portion of the network data comprises a transmit portion of the network data.

13. (Original) The network device of claim 12, wherein the transmit portion of the network data comprises at least one path.

14. (Currently Amended) The network device of ~~claim 2~~ claim 1, wherein the physical layer test port is a first physical layer test port and the physical layer subsystem further comprises:

a second physical layer test port coupled to the physical layer subsystem and the upper layer subsystem and ~~capable of being~~ connected to a third physical network attachment.

15. (Currently Amended) The network device of claim 14, wherein the cross-connection subsystem ~~is further capable of multicasting~~ multicasts another portion of the network data to the second physical layer test port.

16. (Original) The network device of claim 1, wherein the physical layer subsystem further comprises:

a cross-connection subsystem for transferring the network data from the upper layer subsystem to the physical layer working port and for transferring test data from the physical layer test port to the upper layer subsystem.

17. (Currently Amended) The network device of claim 1, wherein the physical layer working port is a first physical layer working port and wherein the physical layer subsystem further includes:

a second physical layer working port ~~capable of being~~ connected to a third physical network attachment; and

wherein the network device further includes:

a cross-connection subsystem for transferring the network data between the first and second physical layer working ports and the upper layer subsystem and for multicasting a first portion of the network data transferred between the first physical layer working port and the upper layer subsystem to the physical layer test port and for multicasting a second portion of the network data transferred between the second physical layer working port and the upper layer subsystem to the physical layer test port.

18. (Original) The network device of claim 1, wherein the first physical network attachment comprises an input optical fiber and output optical fiber.

19. (Original) The network device of claim 1, wherein the first physical network attachment comprises an input cable and an output cable.

20. (Original) The network device of claim 1, wherein the physical layer protocol comprises SONET.

21. (Original) The network device of claim 1, wherein the physical layer protocol comprises Ethernet.

22. (Original) The network device of claim 1, wherein the upper layer protocol comprises ATM.

23. (Original) The network device of claim 1, wherein the upper layer protocol comprises MPLS.

24. (Original)   The network device of claim 1, wherein the upper layer protocol comprises IP.

25. (Original)   The network device of claim 1, wherein the upper layer protocol comprises Frame Relay.

26. (Currently Amended) A network device, comprising:

an upper layer subsystem for transferring network data in accordance with an upper layer protocol;

a physical layer subsystem for transferring the network data with the upper layer subsystem and including a plurality of ports ~~capable of being~~ connected to physical network attachments, wherein one or more of said ports being designated as physical layer test ports and one or more of said ports being designated as working ports, wherein at least one of said test ports is ~~capable of being~~ programmed to function as a working port for normal transfer of data:

a cross-connection subsystem for transferring the network data between the upper layer subsystem and the working ports and for multicasting a portion of the network data to at least one of the test ports;

wherein said cross-connection subsystem transfers network data between the physical layer working port and the upper layer subsystem and multicasts a portion of the network data to the physical layer test port wherein said network data remains unprocessed and untranslated by said upper layer subsystem;

wherein the cross-connection subsystem ~~is capable of programming~~ programs said at least one test port while the network device is operating to function as a working port for normal data transfer while maintaining uninterrupted service provided by said network device.

27. (Cancelled)

28. (Currently Amended)   The network device of claim 26, wherein the test ports comprise a first test port and a second test port and wherein the cross-connection subsystem is capable of multicasting multicasts a portion of the network data to the first test port and another portion of the network data to the second test port.

29. (Previously Presented) The network device of claim 26, wherein the working ports comprise a first working port and a second working port and wherein the cross-connection subsystem is capable of transferring the transfers network data between the upper layer subsystem and the first and second working ports and of multicasting a first portion of the network data transferred between the upper layer subsystem and the first working port to one of the test ports and a second portion of the network data transferred between the upper layer subsystem and the second working port to the test port.

30. (Previously Presented)   The network device of claim 26, wherein the cross-connection subsystem is capable of transferring transfers data from at least one of the test ports to at least one of the working ports.

31. (Currently Amended) A network device, comprising:

an upper layer subsystem for transferring network data in accordance with an upper layer protocol;

a physical layer subsystem including a plurality of ports capable of being connected to physical network attachments, wherein the plurality of ports include a working port and a test port; and

a cross-connection subsystem coupled to the upper layer subsystem and the physical layer subsystem and capable of being programmed to transfer the network data between the upper layer subsystem and the working port and to multicast a portion of the network data to the test port wherein said network data remains unprocessed and untranslated by said upper layer subsystem,

wherein at least one of said network attachments is a test equipment and wherein said test port is capable of transmitting test data from said test equipment to said any of said physical layer subsystem and said cross-connection subsystem;

wherein said at least one test port is programmed while the network device is operating to function as a working port for normal data transfer while maintaining uninterrupted service provided by said network device.

32. (Currently Amended) The network device of claim 31, wherein the test port is a first test port, the plurality of ports further comprises a second test port and the cross-connection subsystem is ~~further capable of being~~ programmed to multicast another portion of the network data to the second test port.

33. (Currently Amended) The network device of claim 31, wherein the cross-connection subsystem is further ~~capable of being~~ programmed to send the network data from the upper layer subsystem to the working port and test data from the test port to the upper layer subsystem.

34. (Currently Amended) The network device of claim 31, wherein the working port is a first working port, the plurality of ports includes a second working port and the cross-connection subsystem is further ~~capable of being~~ programmed to transfer the network data between the upper layer subsystem and the first and second working ports and to multicast a first portion of the network data transferred between the upper layer subsystem and the first working port to the test port and to multicast a second portion of the network data transferred between the upper layer subsystem and the second working port to the test port.

35. (Currently Amended) A method of operating a network device, comprising:

transferring network data between a physical layer working port within a physical layer subsystem and a physical network attachment capable of being coupled with another network device;

transferring network data between the working port and an upper layer subsystem; and

providing another port within said physical layer subsystem capable of being programmed to function as a test port or another working port;

programming said another port to function as a test port while the network device is operating without disrupting or slowing service provided by said network device; and

sending a copy of a portion of the network data transferred between the working port and the upper layer subsystem to the physical layer test port with minimal modification and no translation or processing by said upper layer subsystem.

36. (Original) The method of claim 35, further comprising:

sending a copy of another portion of the network data transferred between the physical layer subsystem and the upper layer subsystem to the test port.

37. (Original) The method of claim 35, further comprising:

sending the copy of the portion of the network data transferred between the working port and the upper layer subsystem to another test port.

38. (Original) The method of claim 35, wherein sendmg a copy of a portion of the network data transferred between the working port and the upper layer subsystem to a physical layer test port comprises:

programming a cross-connection subsystem to provide connections between the working port, the upper layer subsystem and the test port.

39. (Original) The method of claim 38, further comprising:

re-programming the cross-connection subsystem to provide connections between the working port, the upper layer subsystem and another test port.

40. (Original) The method of claim 38, further comprising:

re-programming the cross-connection subsystem to provide connections between another working port, the upper layer subsystem and the test port.

41. (Original)   The method of claim 38, wherein sending a copy of a portion of the network data transferred between the working port and the upper layer subsystem to a physical layer test port comprises:

   programming a cross-connection subsystem to provide connections between the working port and the upper layer subsystem and between a receiver of the working port and the test port.

42. (Original)   The method of claim 35, wherein sending a copy of a portion of the network data transferred between the working port and the upper layer subsystem to a physical layer test port comprises:

   programming a cross-connection subsystem to provide connections between the working port and the upper layer subsystem and between a transmitter of the upper layer subsystem and the test port.

43. (Previously Presented)   The method of claim 35, further comprising

   programming a cross-connection subsystem to provide connections between a transmitter of the upper layer subsystem and a connection of the working port for transmitting data to another network device and between a receiver of the upper layer subsystem and a connection of the test port for receiving data from the network attachment.

44. (Original)   The method of claim 35, wherein the portion of the network data comprises at least one path.

45. (Currently Amended)   A network device, comprising:

   a plurality of ports capable of being connected to external physical network attachments wherein at least one of said ports is capable of being programmed as a test port or a working port while the network device is operating; and

a cross-connection subsystem for transfering network data between said at least one port and an upper layer subsystem wherein said network data remains unprocessed and untranslated by said upper layer subsystem.

46. (Previously Presented) The network device of claim 45, wherein the physical layer subsystem transfers network data in accordance with SONET protocol.

47. (Previously Presented) The network device of claim 45, wherein at least one of the plurality of ports is programmed as a test port and at least one of the plurality of ports is programmed as a working port and the physical layer subsystem further includes:

a cross-connection subsystem for multicasting network data to the test port and the working port.

48. (Previously Presented) The network device of claim 47, wherein the test port is a first test port and another one of the plurality of ports is programmed as a second test port and wherein the cross-connection subsystem is capable of multicasting the network data to the working port, the first test port and the second test port.

49. (Currently Amended) The network device of claim 47, wherein the working port is a first working port and another one of the plurality of ports is programmed as a second working port and wherein the cross-connection subsystem ~~is capable of transferring~~ transfers the network data between the first and second working ports and for multicasting the network data to the test port.

50. (Previously Presented) The network device of claim 45, wherein at least one of the plurality of ports is programmed as a working port and at least one of the plurality of ports is programmed as a test port and the physical layer subsystem further includes:

a cross-connection subsystem for transferring the network data from the test port to the working port.

51. (Currently Amended) A network device, comprising:

a physical layer subsystem including a plurality of ports capable of being connected to physical network attachments, wherein the plurality of ports include at least one working port and at least one test port; and

a cross-connection subsystem coupled to the physical layer subsystem and capable of being programmed to transfer the network data to the working port and to the test ~~wherein said network data remains unprocessed and untranslated by said upper layer subsystem,~~

wherein said cross-connection subsystem ~~is capable of configuring~~ configures said test port to function as another working port for normal transfer of data while the network device is operating while maintaining uninterrupted service provided by said network device.

52. (Currently Amended) A network device, comprising:

a physical layer subsystem including a plurality of ports; and

a cross-connect subsystem coupled to the physical layer subsystem and ~~capable of being~~ configured to implement at least one of the plurality of ports as a working port and at least another of the plurality of ports as a test port;

wherein said cross-connect subsystem transfers network data between the physical layer subsystem and an upper layer subsystem and multicasts a portion of the network data to said test wherein said network data remains unprocessed and untranslated by said upper layer subsystem; and

wherein said cross-connect subsystem ~~is capable of reprogramming~~ reprograms said test port to function as another working port for normal transfer of data while the network device is operating while maintaining uninterrupted service provided by said network device.

53. (Previously Presented) The network device of claim 52, wherein the cross-connect subsystem ~~is capable of muliteasting~~ multicasts network data to the working port and the test port.